

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) In a semiconductor manufacturing environment where logic functions are implemented by the coupling together of a plurality of different types of standard cells, each type of standard cell implementing a particular logic function, a method for improving yield of the integrated circuit through the manufacturing environment, the method comprising the steps of:

designing a plurality of different variants for the standard cells in a library, each of the plurality of different standard cell variants addressing a different manufacturing problem;
selecting standard cells in one standard cell variant to be used in a particular manufacturing environment to optimize the yield of integrated circuits fabricated using the selected standard cells; and
coupling together the selected standard cells to implement the logic functions.

2. (currently amended) In a semiconductor manufacturing environment where logic functions are implemented by the coupling together of a plurality of different types of standard cells, each type of standard cell implementing a particular logic function, a method for improving yield of the integrated circuit through the manufacturing environment, the method comprising the steps of:

designing a plurality of different variants for the standard cells in a library, each of the plurality of different standard cell variants addressing a different manufacturing problem, wherein the variants are designed to at least address the manufacturing problems of poor contact formation, contact alignment, metal line spacing and metal line direction changes;

selecting standard cells in one standard cell variant to be used in a particular manufacturing environment to optimize the yield of integrated circuits fabricated using the selected standard cells; and
coupling together the selected standard cells to implement the logic functions ~~wherein the variants are designed to at least address the manufacturing problems of poor contact formation, contact alignment, metal line spacing and metal line direction changes.~~

3. (currently amended) In a semiconductor manufacturing environment where logic functions are implemented by the coupling together of a plurality of different types of standard cells, each type of standard cell implementing a particular logic function, a method for improving yield of the integrated circuit through the manufacturing environment, the method comprising the steps of:

designing a plurality of different variants for the standard cells in a library, each of the plurality of different standard cell variants addressing a different manufacturing problem;

selecting standard cells in one standard cell variant to be used in a particular manufacturing environment to optimize the yield of integrated circuits fabricated using the selected standard cells; and

coupling together the selected standard cells to implement the logic functions wherein each of the variants is assigned a manufacturability rating, the step of selecting a standard cell variant being influenced by the assigned manufacturability rating.

4. (currently amended) In an integrated circuit design environment wherein multiple standard components are used to form an integrated circuit design, a method for allowing an integrated circuit designer to optimize the integrated circuit design, the method comprising the steps of:

designing a plurality of variants of the standard components wherein the variants are designed to at least address the manufacturing problems of poor contact formation, contact alignment, metal line spacing and metal line direction changes;

rating each design variant on at least one variable; and

selecting the design variant whose rating most closely matches designer's criteria for use in the integrated circuit design.

5. (previously amended) The method of claim 4 wherein the standard components comprise standard logic cells.

6. (previously amended) The method of claim 4 wherein the standard components comprise input/output cells.

7. (previously amended) The method of claim 4 wherein the standard components comprise memory core cells or entire memory blocks including core cells.

8. (previously amended) The method of claim 4 wherein the standard components perform at least an analog function, the analog function including one of at least phase locked loops and analog-to-digital converters.

9. (previously amended) The method of claim 4 wherein each of the standard components and its variants are characterized to indicate the manufacturing yield of the particular variant.

10. (Cancelled)

11. (currently amended) The method of claim ~~10~~ 4 wherein the variants of standard components comprise variants of standard logic cells.

12. (previously amended) The method of claim 11 wherein the variants of standard logic cells have each been assigned a rating which indicates its manufacturability in at least a manufacturing environment.

13. (original) The method of claim 12 wherein the variants of standard logic cells have a plurality of different manufacturability ratings, a different rating being assigned for each different potential manufacturing environment.

14. (currently amended) A system for improving the manufacturability of an integrated circuit, the system comprising:

a library comprised of a plurality of variant designs for standard components of the integrated circuit, each of the plurality of variant designs compensating for at least a known manufacturing problem; and

a synthesis tool coupled to the library, the synthesis tool formulating and presenting to a user a proposed IC design, the proposed IC design incorporating a variant design that corrects for a known manufacturing problem encountered in a particular manufacturing environment selected by the user.

15. (original) The system of claim 14 wherein the library is further comprised of a plurality of variant designs of standard logic cells.

16. (currently amended) A system for improving the manufacturability of an integrated circuit, the system comprising:

a library comprised of a plurality of variant designs for standard components of the integrated circuit, each of the plurality of variant designs compensating for at least a known manufacturing problem; and

a synthesis tool coupled to the library, the synthesis tool formulating and presenting to a user a proposed IC design, the proposed IC design incorporating a variant design that corrects for a known manufacturing problem encountered in a particular manufacturing environment selected by the user wherein the library is further comprised of a plurality of variant designs of standard logic cells and wherein the plurality of variant designs of standard logic cells are rated on a manufacturability index, a different rating being assigned to each variant for each manufacturing environment in which it is used.

17. (original) The system of claim 14 wherein the library is further comprised of a plurality of variant designs of memory core cells.

18. (original) The system of claim 14 wherein the library is further comprised of a plurality of variant designs of input/output cells.

19. (currently amended) A system for improving the manufacturability of an integrated circuit, the system comprising:

a library comprised of a plurality of variant designs for standard components of the integrated circuit, each of the plurality of variant designs compensating for at least a known manufacturing problem; and

a synthesis tool coupled to the library, the synthesis tool formulating and presenting to a user a proposed IC design, the proposed IC design incorporating a variant design that corrects for a known manufacturing problem encountered in a particular manufacturing environment selected by the user wherein the plurality of variant designs also include compensation for a design related IC yield limiter, the IC yield limiters including at least leakage current through transistors.